

SUMMARY: IMPACTS OF THE CLEAR SKIES INITIATIVE ON EPA REGION II¹

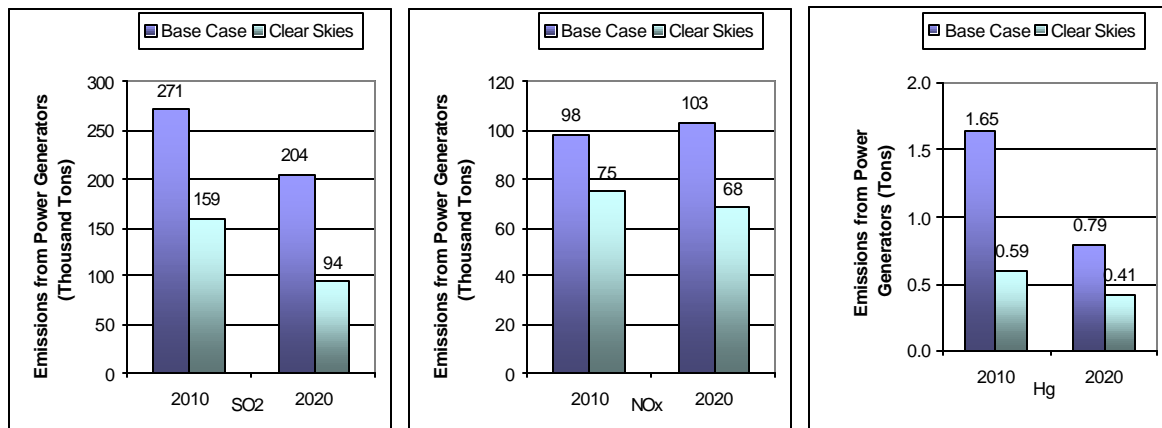
EPA Region II includes New York and New Jersey. (Puerto Rico and the Virgin Islands are also in Region II but are not included in this analysis.)

Costs: *Nationwide*, the projected annual costs of Clear Skies (in \$1999) are \$3.69 billion in 2010 and \$6.49 billion in 2020.²

Changes in Emissions under Clear Skies: Clear Skies will result in significant emissions reductions from power generators by 2020:

- *Nationwide*, by 2020 SO₂ emissions from power generators are projected to be 3.9 million tons (a 65% reduction relative to 2000 emissions). NOx emissions are projected to be 1.7 million tons (a 67% reduction relative to 2000 emissions) and mercury emissions are projected to be 18 tons (a 63% reduction relative to 2000 emissions). At full implementation, the emission reductions will be 73% for SO₂, 67% for NOx, and 69% for mercury.
- *In EPA Region II* by 2020, Clear Skies is projected to reduce SO₂ emissions from power generators by 73%, NOx emissions by 39% and mercury emissions by 33% relative to 2000 emissions.

Figures 1a, 1b and 1c. Existing Clean Air Act (base case³) vs. Clear Skies Region II in 2010 and 2020



- Emissions rates *in Region II* in 2010 and 2020:

Table 1. Projected Emissions Rates in 2010 and 2020 in Region II from Power Generators

Year		SO ₂	NOx		Hg	
		Coal	All	Coal	Gas	Coal
	Units	lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/TBtu
2010	Base Case	1.42	0.18	0.42	0.05	8.62
	Clear Skies	0.89	0.14	0.32	0.05	3.30
2020	Base Case	1.03	0.17	0.42	0.05	3.98
	Clear Skies	0.47	0.11	0.24	0.05	2.05

¹ The projected impacts are EPA estimates, EIA's modeling would likely show different impacts.

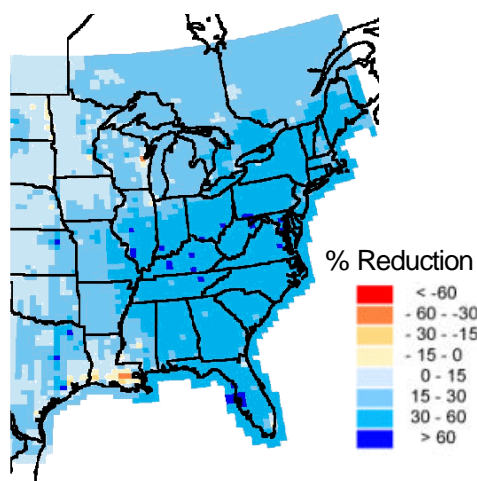
² EPA uses the Integrated Planning Model (IPM) to project the economic impact of Clear Skies on the power generation sector. IPM disaggregates the power generation sector into specific regions based on properties of the electric transmission system, power market fundamentals, and regional environmental regulations. These regions do not conform to States or EPA region boundaries making some compliance options, such as dispatch, and associated costs impractical to differentiate at a State or Regional level.

³ The base case includes Title IV, the NOx SIP call and State-specific caps in CT, MO and TX. It does not include mercury MACT in 2008 or any other potential future regulations to implement the current Clean Air Act.

Human Health and Environmental Benefits of Clear Skies: Clear Skies would protect human health, improve air quality, and reduce deposition of sulfur, nitrogen, and mercury.

- *Nationwide* in 2010, early reductions under Clear Skies would result in 6,400 fewer premature deaths and over \$40 billion in annual health benefits from the reduction in fine particulate matter alone.
- *Nationwide* by 2020, when fully implemented, health benefits from fine particles alone total \$93 billion (almost 12,000 fewer premature deaths), far outweighing the costs of the Clear Skies program. Approximately \$10 billion of those benefits would occur *in Region II*
 - *Nationwide*, using an alternative methodology results in over 7,000 premature deaths prevented and \$11 billion in benefits in 2020—still exceeding the costs of the program⁴.
- *In EPA Region II*, the annual health benefits of Clear Skies in 2020 include:
 - over 1,000 fewer premature deaths
 - over 800 fewer cases of chronic bronchitis
 - over 25,000 fewer asthma attacks
 - approximately 1000 fewer hospitalizations and emergency room visits
 - over 200,000 fewer lost work days due to respiratory symptoms
- 2.5 million people live in one county *in Region II* that would come into attainment with the fine particle standard under the Clear Skies program by 2020 (beyond expectations from existing programs)
- *By 2020 in Region II*,
 - there would be substantial reductions in sulfur deposition compared to 1996 levels (see map)
 - sulfur deposition would decrease 20-30% beyond expectations from existing programs
 - nitrogen deposition would decrease 30-60% from 1996 levels (10-20% beyond expectations from existing programs)
 - preliminary estimates indicate mercury deposition would decrease substantially
 - visibility would improve 1-3 deciviews from 1996 levels (a change of 1 deciview is a perceptible change)

Figure 2. Percent change in sulfur deposition, 1996 vs. Clear Skies (2020)

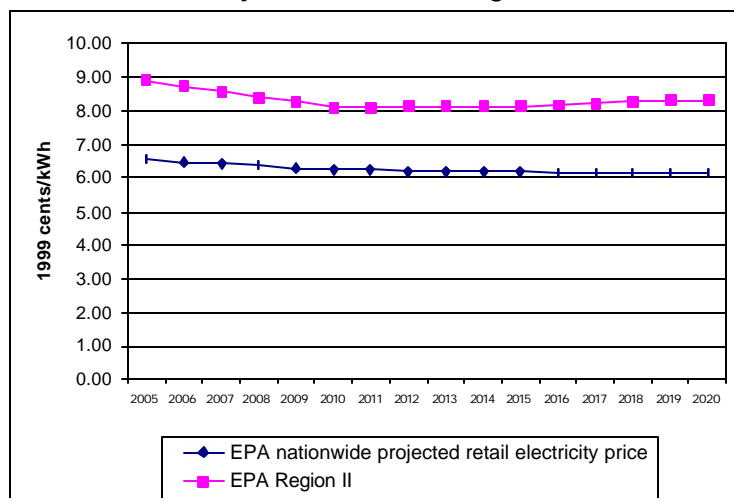


⁴ The two sets of estimates reflect alternative assumptions and analytical approaches regarding quantifying and evaluating the effects of airborne particles on public health. All estimates assume that particles are causally associated with health effects, and that all components have the same toxicity. Linear concentration-response relationships between PM and all health effects are assumed, indicating that reductions in PM have the same impact on health outcomes regardless of the absolute level of PM in a given location. The base estimate relies on estimates of the potential cumulative effect of long-term exposure to particles, while the alternative estimate presumes that PM effects are limited to those that accumulate over much shorter time periods. All such estimates are subject to a number of assumptions and uncertainties. It is of note that, based on recent preliminary findings from the Health Effects Institute, the magnitude of mortality from short-term exposure (alternative estimates) and hospital/ER admissions estimates (both estimates) may be overstated. The alternatives also use different approaches to value health effects damages. The key assumptions, uncertainties, and valuation methodologies underlying the approaches used to produce these results are detailed in *Technical Addendum: Methodologies for Benefit Analysis of the Clear Skies Initiative*, July 2002 that will accompany the technical benefits analyses for the Clear Skies proposal.

- In the Northeast and the Adirondacks, chronic acidity is projected to be virtually eliminated from lakes by 2030

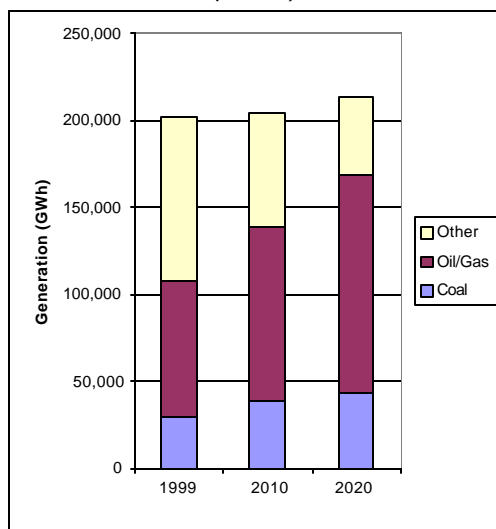
Changes in Projected Retail Electricity Prices under Clear Skies: In 1999, the average retail electricity price in EPA Region II was approximately 10.26 cents/kWh⁵, which was above the average national retail price of approximately 6.66 cents/kWh (1999 data from EIA).⁶ As shown in Figure 3, retail prices in EPA Region II are projected to decrease, but remain above the projected national average between 2005 and 2020.⁷

Figure 3. Projected Retail Electricity Prices in EPA Region II under Clear Skies (2005-2020)



Generation in EPA Region II under Clear Skies: Coal-fired power plants currently produce 15% of the electricity generated in EPA Region II. This contribution of coal-fired generation will increase in EPA Region II under Clear Skies to approximately 19% through 2020.

Figure 4. Current and Projected Generation by Fuel Type in EPA Region II under Clear Skies (GWh)⁸



⁵ This was an average of the states in EPA Region II, weighted by utility retail sales

⁶ Source: EIA at http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/retailprice.html

⁷ Retail electricity prices vary considerably across the United States. Variation in prices can be caused by many factors including access to low cost fuels for generating power, State taxes, and the mix of power plants in the States. Projected retail electricity prices were weighted based on capacity of the NEMS/NERC regions within EPA Region II.

⁸ Note: 1999 data from EIA, aggregated from state-level data found at http://www.eia.doe.gov/cneaf/electricity/st_profiles/ (Table 5).

- EPA does not project that any facilities in EPA Region II will switch from coal to natural gas in response to the Clear Skies emissions caps. Instead, Region II reduces its emissions through the installation of control technologies:
 - In 2020, there is projected to be approximately 5,800 MW of coal-fired capacity under Clear Skies in EPA Region II. 1,800 MW would have Selective Catalytic Reduction (SCR), and 2,500 MW would have scrubbers.
- 50% of EPA Region II's coal-fired generation comes from coal units with emission control equipment in 2010, and 76% in 2020.⁹

Coal Production in EPA Region II: EPA Region II did not produce coal in 2000 and is not projected to produce coal under Clear Skies.

Major Generation Companies in EPA Region II: The ten largest plants Region II -- each over 1069 MW -- are a combination of nuclear, hydro, coal-, petroleum- and gas-fired units. The major electric utilities include: Public Service Electric and Gas Co., Niagara Mohawk Power Corp., Consolidated Edison Co.-NY Inc., Long Island Power Authority, and the Power Authority of State of New York.

⁹ Emissions control equipment includes, where applicable, scrubbers, selective catalytic reduction, selective non-catalytic reduction, gas-reburn and activated carbon injection.